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CLAIMS

What is claimed is:

5    1.    A system for testing a device, comprising:

memory having a test application stored therein;

a test interface to connect to a device; and

a processor coupled to the memory and the test interface, the processor

being configured to operate in accordance with the test application to:

10                    i)        provide a series of instructions based on a test procedure

defining a device testing task, the test procedure including

multiple test elements, each test element defining

instructions and programmable input variables that direct

the processor to perform a particular test operation of the

15                              device testing task, and

ii)       control the test interface based on the provided series of

instructions in order to test the device.

2. The system of claim 1, further comprising:

an input/output device coupled to the processor, wherein the processor is further configured to operate in accordance with the test application to provide a graphical user interface on the input/output device through which a user directs the processor to:

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  (i)  combine test elements from a test element database to form the test procedure;

  (ii)  set at least a portion of the programmable input variables of each test element forming the test procedure to initial values;

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  (iii)  indicate an operating order for the test elements forming the test procedure; and

  (iv)  store the test procedure within the memory.

3. The system of claim 1 wherein the test procedure includes:

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a first test element which defines instructions directing the processor to perform a first test operation that provides a first result; and

a second test element which defines a second set of instructions directing the processor to perform a second test operation that provides a second result which is based on the first result.

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4. The system of claim 1 wherein the test procedure is a nested test procedure that is nested within another test procedure such that the processor provides instructions to perform the device testing task when providing instructions based on the other test procedure.

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5.  The system of claim 1 wherein the processor includes multiple processing units that are associated with respective multiple devices, and wherein each of the multiple processing units is configured to control a respective portion of the test interface based on the provided series of instructions to test the respective multiple devices in parallel.

6.  The system of claim 1 wherein the processor includes multiple processing units that are associated with respective multiple devices, and wherein the multiple processing units are configured to control respective portions of the test interface based on instructions defined by a single instance of the test procedure to test the respective multiple devices in parallel.

7.  The system of claim 1 wherein the device is a mixed signal device, and wherein the test procedure includes:

    a first test element which defines instructions directing the processor to perform an analog signal test operation; and

    a second test element which defines instructions directing the processor to perform a digital signal test operation.

8.  The system of claim 1 wherein the processor is further configured to:

    analyze the test procedure to identify which programmable input variables of the test elements of the test procedure require initial values; and

    create a graphical user interface component which prompts a user to provide the required initial values to initialize the identified programmable input variables.

9.      A method for testing a device, comprising the steps of:

obtaining a test procedure which defines a device testing task, the test procedure including multiple test elements, each test element defining instructions and programmable input variables that direct a processor to perform a particular test operation of the device testing task;

providing a series of instructions based on the test procedure; and

controlling a test interface based on the provided series of instructions in order to test the device.

10.     The method of claim 9, further comprising the steps of:

providing a graphical user interface on an input/output device through which a user directs the processor to:

(i)     combine test elements from a test element database to form the test procedure;

(ii)    set at least a portion of the programmable input variables of each test element forming the test procedure to initial values;

(iii)   indicate an operating order for the test elements forming the test procedure; and

(iv)    store the test procedure within a memory.

11.     The method of claim 9 wherein the step of providing includes the steps of:

providing instructions directing the processor to perform a first test operation that provides a first result based on a first test element of the test procedure; and

providing instructions directing the processor to perform a second test operation that provides a second result based on a second test element of the test procedure, the second result being based on the first result.

12. The method of claim 9 wherein the test procedure is a nested test procedure that is nested within another test procedure, and wherein the step of providing includes the step of:

    providing instructions directing the processor to perform the device testing task when providing instructions based on the other test procedure.

13. The method of claim 9 wherein the test interface includes multiple processing units that are associated with respective multiple devices, and wherein the step of controlling the test interface includes the steps of:

    operating each of the multiple processing units of the test interface based on the provided series of instructions to test each of the respective multiple devices in parallel.

14. The method of claim 9 wherein the test interface includes multiple processing units that are associated with respective multiple devices, and wherein the step of controlling the test interface includes the steps of:

    operating the multiple processing units of the test interface based on instructions defined by a single instance of the test procedure to test each of the respective multiple devices in parallel.

15. The method of claim 9 wherein the device is a mixed signal device, and wherein the step of providing includes the steps of:

    providing instructions directing the processor to perform an analog signal test operation based on a first test element of the test procedure; and

    providing instructions directing the processor to perform a digital signal test operation based on a second test element of the test procedure.

16. The method of claim 9, further comprising the steps of:

   analyzing the test procedure to identify which programmable input variables of the test elements of the test procedure require initial values; and

   creating a graphical user interface component which prompts a user to provide the required initial values to initialize the identified programmable input variables.

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17. A method for providing a test procedure for testing a device, comprising the steps of:

   combining test elements from a test element database to form a test procedure such that (i) the test procedure defines a device testing task, (ii) the test procedure includes multiple test elements, and (iii) each test element defines instructions and programmable input variables that direct a processor to perform a particular test operation of the device testing task;

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   setting at least a portion of the programmable input variables of each test element forming the test procedure to initial values;

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   indicating an operating order for the test elements forming the test procedure; and

   storing the test procedure within a memory.

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18. The method of claim 13 further comprising the step of:

   nesting the test procedure within another test procedure.

19.    The method of claim 13 wherein the device is a mixed signal device, and wherein the step of combining includes the steps of:

    incorporating a first test element into the test procedure, the first test element defining instructions which direct the processor to perform an analog signal test operation; and

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    incorporating a second test element into the test procedure, the second test element defining instructions which direct the processor to perform a digital signal test operation.

10    20.    A computer program product that includes a computer readable medium having instructions stored thereon for testing a device, such that the instructions, when processed by a data processing device, cause the data processing device to perform the steps of:

    obtaining a test procedure which defines a device testing task, the test

15    procedure including multiple test elements, each test element defining instructions and programmable input variables that direct the processor to perform a particular test operation of the device testing task;

    providing a series of instructions based on the test procedure; and

    controlling the test interface based on the provided series of instructions in

20    order to test the device.

21. A computer program product that includes a computer readable medium having instructions stored thereon for providing a test procedure for testing a device, such that the instructions, when processed by a data processing device, cause the data processing device to perform the steps of:

5      combining test elements from a test element database to form a test procedure such that (i) the test procedure define a device testing task, (ii) the test procedure includes multiple test elements, and (iii) each test element defines instructions and programmable input variables that direct a processor to perform a particular test operation of the device testing task;

10      setting at least a portion of the programmable input variables of each test element forming the test procedure to initial values;

     indicating an operating order for the test elements forming the test procedure; and

     storing the test procedure within a memory.

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22. An automatic test system having computer readable memory, the computer readable memory having stored therein a computer program comprising:

     a)     multiple test elements, each test element having user programmable input values, and each test element configured to direct the

20      automatic test system to perform a portion of the steps of a test method;

     b)     multiple test procedures, each test procedure configured to direct the automatic test system to perform a test method and including:

         i)     multiple test elements;

         ii)     information indicating an order of execution of the

25      test elements; and

         iii)     information indicating user programmed input values for at least a portion of the test element.

23. A method of programming an automatic test system comprising the steps of:

a)    providing a test procedure development environment, the test procedure development environment having a user actuated tool to select a test element from a set of test elements and a test element data entry area displaying data entry fields for a selected test element;

b)    selecting a first test element from the set of test elements;

c)    entering data in the data entry area for the selected test element;

d)    selecting at least one additional test element from the set of test elements; and

e)    entering data in the data entry area for each additional test element.